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ABSTRACT

A study examined welfare reform and food security issues. Interviews were conducted with 32 rural Louisiana women in 1997-98 when they were receiving welfare payments, in 1998-99 when they were in transition, and in 2000-01 when none received Temporary Assistance for Needy Families (TANF). Most women were African-American; about half had not completed high school or a GED. Most women received food stamps, and all households with children relied on free breakfast and lunch programs at their children's schools. The overwhelming majority of study participants had poor diets, despite the fact that few reported food insecurity or hunger. They ate primarily fried foods, fat meats, and large quantities of food--when food was available. About 62 percent of participants were overweight or obese. Nutrition-related chronic diseases, like Type 2 diabetes mellitus, coronary heart disease, and hypertension disproportionally affect low-income women, and obesity is often a co-morbid condition. A policy change like the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 that makes even a temporary reduction in household income can have negative effects on food security. The women's lack of health care coverage will loom large as their health history, poor nutrition, lack of nutrition education, and environmental stressors undermine their long-term physical well-being. The "food safety net" must be protected so that not only food security, but healthy eating, gives low-resource families and children the best possible chance for self-sufficiency on all levels. (Contains 17 references.) (TD)

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FOOD ASSISTANCE NEEDS OF THE SOUTH'S VULNERABLE POPULATIONS

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SOUTHERN RURAL DEVELOPMENT CENTER

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The Challenge of Compliance: Food Security in Rural Households Affected by Welfare Reform

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Food security and individual freedom from hunger are widely accepted indicators of our nation's level of commitment to its poor and welfare-reliant citizens. The federal Food Stamp Program allows many poor American citizens and families to have access to at least minimal, adequate amounts of nutritious foods. The Food Stamp Program is regarded as a successful effort in the nation's fight against hunger, but the program is not without limits. Food stamps, together with cash provided by the family, are designed to cover the cost of the USDA's Thrifty Food Plan [5]. However, even with careful planning, a poor family may find itself with few food benefits and very little cash at the end of a month. Food intake may suffer in quantity and nutritional quality at the end of a family's food resource cycle (RC).

It is important to monitor the food sufficiency of poor families as they attempt to comply with the mandates of the federal welfare reform legislation. The welfare reform act (Personal Responsibility and Work Opportunity Reconciliation Act of 1996 or PRWORA) reduced funding for the Food Stamp Program, with reductions accomplished primarily by reducing or eliminating eligibility for single, able-bodied adults and legal immigrants [13]. The Food Stamp Program continues to be an important component of the federal level safety net for poor families and may play an even larger role in their lives as their welfare benefits are exhausted [7, 8].

Recent years have seen the United States riding an unprecedented wave of economic prosperity and a concomitant decline in the incidence of food insecurity in U.S. households [2], but that prosperity has been threatened recently by a nationwide recession. Rural regions are particularly vulnerable to such economic downturns. Portions of the rural South contain some of the nation's worst child poverty, particularly for minority group children [3]. As poverty and food insecurity are closely linked, it is no surprise that the rural South in general and Louisiana in particular, experience higher levels of food insecurity than exists in the nation on average [11]. Will families continue to meet the challenges of PRWORA compliance, survive the current recession and maintain a stable, quality food supply?

The purpose of this report is to share the findings of a research project on welfare reform and food security issues. We interviewed former welfare-reliant and working-poor women in Louisiana during late fall 2000 through late summer 2001 as part of an ongoing, long-term study of welfare reform. In the sections that follow, we describe briefly the community and social context of our research, the ways in which we measured issues of food security and nutritional adequacy and our findings on these and related topics.

The Research Context

In 1997, we launched an intensive qualitative study of the impact of welfare reliance and the welfare reform law on rural Louisiana families. (See [9] for a more thorough discussion

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of the methodology of Round 1). All of the women interviewed were receiving welfare payments in 1997-98 but faced the termination of their eligibility for welfare program participation over the next 12-24 months. The women relied on an array of government assistance including food stamps, housing support and Medicaid.

The women were visited again in fall 1998-spring 1999. At this point, most of the women were in a transition period: Their TANF eligibility had expired, and they were making initial efforts at paid work and wage-based self sufficiency. The interview approach was qualitative, but the short form of the USDA's Food Security items was added to the interview. Related open-frame questions about food sources and strategies for feeding their families also were included. (See [10] for a complete description of the methodology).

Beginning in fall 2000 through summer 2001, we visited as many of the original women as could be located and invited their participation in a third round of data collection. At that time, none of the women received TANF and most were participating in the work force. A few were struggling or had failed to succeed at paid work. The timing of each woman's electronic food stamp deposit was used to organize the interviews, so that each woman was interviewed at the beginning and near the end of her RC, whether that RC consisted of food stamp benefits or her cash income from salary, child support or similar sources of monies. Altogether, the data from this project constitute a fairly comprehensive, qualitative study of rural women's transition from welfare reliance to wage work [a].

Description of Participants

Data from 32 women who participated in the third round of the LA study are used in this analysis. The women may be described as follows (see Table 1). The average age of the participants was just over 34 years; most of the women were African-American (n = 29). About 72 percent of the women interviewed had three or fewer children.

At the time of their third interview, 15 women had still not completed high school or received a GED. At the beginning of the study, nearly all of the women were enrolled in, at minimum, a GED completion program if they did not have a high school diploma. The women in this round who still had not completed the GED — or any additional training — and were not in any training program, may represent women who had attempted programs and failed, then ran out of time to complete their programs. These women are not likely to attempt or to receive any further education at this point, leaving them at high risk for unemployment and economic insecurity.

The primary source of income for the women was their own wages. The average monthly wage earned by the 20 women who reported wages was $782, and ranged from $150-$1950/month. Eleven women reported they had no wage income, and one women reported her spouse supported her on an income in excess of $60k/year. Sixteen women reported receiving child support payments, although few women reported that these payments were absolutely reliable or dependable. The average monthly child support payment was $210, and ranged from $68-$694/month. The average monthly cash income from all sources (excluding the one woman whose spouse's income was far above that earned by any other person in the study) was $737.97.

In sum, previous research alerts us to possible vulnerability in a study group with these characteristics. The rural South has higher rates of poverty, a factor closely linked with food insecurity. Southern states also have been among the most likely to pursue welfare caseload reductions aggressively. There appears to be a link between such policies and food stamp program participation decline and increased food vulnerability. African-Americans are more likely than European-Americans to experience food insecurity, and rural African-Americans are an especially vulnerable group. Single female-headed households are at even greater risk for food insecurity. Children are more likely than adults to experience food insecurity and again, rural children, minority children and children in single-parent households are particularly vulnerable [1, 4, 8, 11, 12].

Table 1 also allows for comparisons to assist in determining whether the women who participated in Round 3 of the Louisiana study were notably different from the original participants in Rounds 1 and 2. As can be seen, the women in Round 1 were about one year older than in Round 2, an expected difference; but in Round 3, a slightly older group of women was interviewed. This difference appears to be accounted for by a decline in the number of women in the youngest age group captured in this round. These young women present a contrasting picture of risk: In previous rounds, they were likely to report little or no work history, less stability in intimate relationships and were likely to bear more children. On the other hand, they were more likely to be in a good position to complete their education and more likely to be living with or in a close network of family and kin. It is difficult to predict how the absence of these younger women skew the findings of Round 3, but it is possible that education level for the total group is suppressed when "young" women are under represented.

Findings

Food Stamp Program Participation. Most of the women in this round of the study still received food stamps (72%). The average monthly food stamp benefit reported by these women was $299.43, with a range in benefits from $16 to $594/month [b]. More than half (56%) of the women in the study reported they spend an average of $112.50 for food beyond their food stamp benefits each month. Interestingly, women whose households no longer received food stamps were seldom able to give researchers even an estimate of their monthly food bill.

Only three women indicated they used church or community food pantries to supplement their food supply on a regular basis. One of these women received $430/month in food stamps, had no children living at home with her and her male partner, and reported no other income of any kind. Their house had been without water and electricity for months. She indicated the two of them kept meat on ice in their bathtub and cooked inside the house on a charcoal grill. Another of these women had four young children at home, received $200/month in child support payments as her only cash income, and received $413/month in food stamp benefits. She indicated that she visited a food pantry once or twice a month, and that her family's food sometimes ran out. She estimated that she spent $40-50/month out-of-

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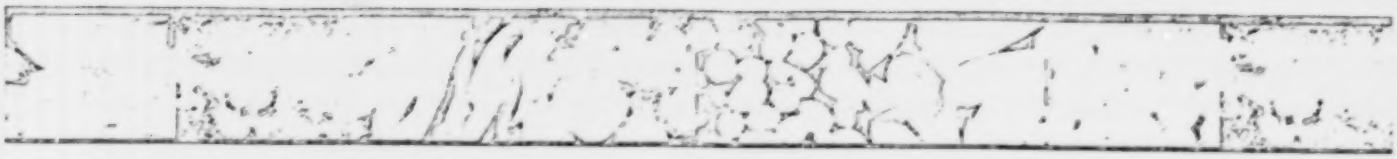

***Table 1.* Description of LA participants by rounds of data collection.**

Variable	Round 1- 1998 (n=84)	Round 2 - 1999 (n=52)	Round 3 - 2001 (n=32)
Race			
African-American	68 (80%)	45 (86.5%)	29 (91%)
European-American	14 (17%)	6 (11.5%)	3 (9%)
Other	2 (3%)	1 (2%)	0
Mean Age	29 years	30 years	34 years
	18-21: n=21 (25%)	19-22: n=13 (25%)	20-23: n=2 (6%)
	22-27: n=21 (25%)	23-28: n=12 (23%)	24-29: n=7 (22%)
	28-35: n=21 (25%)	29-36: n=12 (23%)	30-37: n=9 (28%)
	36-47: n=21 (25%)	37-48: n=15 (29%)	38-49: n=14 (44%)
Marital Status			
Unmarried	82 (97.6%)	48 (92.3%)	27 (84%)
Married	2 (2.4%)	4 (7.7%)	5 (16%)
Education			
Less than High School	58 (69%)	2** (3.8%)	15 (48%)
HS or GED	23 (27.4%)	24 (46.1%)	16 (52%)
Some post-secondary training*	4	50	13
Mean # Children	2.5	2.7	2.8
# of Children			
1-2	45 (53.6%)	26 (50%)	15 (47%)
3-4	33 (39.3%)	22 (42.3%)	14 (44%)
5-8	6 (7%)	4 (7.6%)	3 (9%)
Program Participation*			
TANF	80 (95%)	11(21%)	0
Food Stamps	75 (89%)	45 (87%)	23 (72%)
Medicaid	79 (94%)	47 (90%)	23 (72%)

* More than one response accepted

** In round 2, this number represents women who had no high school diploma or GED certification AND were not/had not engaged in any training program.

pocket for food. The third woman who visited the food pantry no longer received any food stamp benefits, relying on her $675 monthly income and irregular payments of child support in the amount of $69/month to feed herself and two children.

Thirty households — every household in the study that included children — participated in the feeding programs at their children's public schools, with children receiving free breakfast and lunch. In discussing strategies for stretching their food budget, it was clear that some women consciously rely on these meals served at school to ensure balanced nutrition and sufficient food quantity for their children.

USDA Food Security Items. Tables 2 and 3 present quantitative findings for the short form of the food security items. A majority of the women reported food security in their households, with about one-fifth of the women reporting insecurity. However, for two items there was a bimodal distribution in responses indicating food security vs. food insecurity without hunger. The first question probed whether in the last 30 days the food in the household did not last and the woman did not have money to get more. Sixteen women (50%) indicated that was never the case for them, but 13 women (41%) indicated that it sometimes happened and three women indicated that it often happened in their households. These women did not indicate they had no food or food safety net at that point, only that their own resources were running low. On the last item in this set, 14 of 32 women (44%) indicated they always had enough to eat and the kinds of foods they wanted to eat — an important indication of food security. Eighteen women could not give this answer, although 13 of 18 (41% of the total number of participants) indicated they had enough to eat but not always the kinds of food they wanted to eat. In at least one case a woman who gave this response said she would like to have more "sweets" to eat, so response #2 to the global item does not necessarily capture food insecurity.

For five women, the food security of their households seemed threatened. One woman lived with her grandparents and three young children in a ramshackle house. Their cash income was $210/month in child support payments, and they received $398/month in food stamp benefits. This woman indicated that she feeds her grandparents and her children first, making do with what was left or skipping meals. She also had not been able to find and keep a job. Another woman in this group received $120/month in child support for her one child, and $238/month in food stamps. She reported no other source of income and said she often borrowed money from various members of her large family to help make ends meet. A third woman lived in a small house with her three children, her mother, her two younger brothers and, until recently, her sister and her sister's three children. She earned about $800/month but received no food stamp benefits because of what she claimed is a mistaken case of "welfare fraud" against her. She indicated that at night she often ate a pancake of flour and water with a large amount of syrup. Shortly after the interview, this woman lost her job because she could not pass the required typing test.

Food insecurity is likely to lead to anxiety about food and food resources and cause women to adopt strategies for stretching food resources [1]. The women in our study who reported some level of food insecurity engaged in various strategies for stretching their food budget:

- Eating with someone else who was cooking that day: a mother, grandmother, sister or good friend. One woman said, "sometimes his momma cook a big meal and she'll call us up there to come eat. Or either I go to my aunt's house; they fix big meals. And my grandmother, she cooks for the whole town sometimes. It's like so we go over there most of the time."
- Stretching their food by preparing only sandwiches, eggs and grits, or cereal at night, or cooking only a couple of times in a week and eating leftovers in between.
- Buying large quantities of food or pooling

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Table 2. **Modified food security items, LA participants, previous 30 days.**

Item	Never True	Sometimes True	Often True	No	Yes
The food that I bought just didn't last, and I didn't have money to get more.	16	13	3		
We couldn't afford to eat balanced meals.	23	7	2		
Did you ever cut the size of your meals or skip meals because there wasn't enough money for food?				25	7
Did you ever eat less than you felt you should because there wasn't enough money to buy food?				25	7
Were you ever hungry but didn't eat because you couldn't afford enough food?				28	4
Have you not eaten in order to have enough food for your children?				26	6

Global Item:
Which of these statements best describes the food eaten in your household in the last 30 days?

(1) We always have enough to eat and the kinds of food we want. n = 14

(2) We have enough to eat but NOT always the KINDS of food we want. n = 13

(3) SOMETIMES we don't have ENOUGH to eat. n = 4 (food insecurity with hunger)

(4) OFTEN we don't have ENOUGH to eat. n = 1 (food insecurity with hunger)

their resources to buy large quantities of food which they then split with relatives. This strategy might be combined with the strategy of eating with someone else.

These strategies are quite typical of a predictable series of steps taken by food insecure households to protect meager food resources [4]. But some women indicated there were times when there was just little or no food in the house. One mother said, "Some nights when you go to the kitchen to fix supper and there isn't food." We asked her, "what do you do on those nights?" "I try to tell them [her children] to wait 'til tomorrow morning, might have some in the morning," she responded.

Nutrition Assessment. Thirty women, 21 of whom received food stamps, participated in the nutrition assessment aspect of this study. First, each participant's body mass index (BMI) was determined. BMI is the method of choice to determine obesity in a community or clinical setting, and is useful in assessing the health risk of populations. BMI is calculated using the formula: weight (kilograms)/height (meters2). The National Institutes of Health classify overweight as a BMI of 25.0-29.9, and obesity as a BMI of 30.0 or greater. Increasing BMI brings with it increased risk of conditions such as Type 2 diabetes mellitus, hypertension and coronary heart disease. During the in-home interview, stated height was recorded, and weight and BMI were determined for each woman using a Tanita TBF-521 Body Fat Monitor Scale. Only two women were unwilling or unable to be weighed.

Table 3. **Food security status of LA participants: number, percent of women.**

Number of Affirmative	Food Security Status Level	Number of Respondents	Percent of Respondents
0	Food Secure	16	50
1	Food Secure	6	19
2	Food Insecure without Hunger	1	3
3	Food Insecure without Hunger	1	3
4	Food Insecure without Hunger	1	3
5	Food Insecure with Hunger	3	9
6	Food Insecure with Hunger	4	12.5
TOTAL		32	

Note: All items coded or re-coded so that in both tables, a higher score indicates food insecurity.

The most striking finding is the high prevalence of overweight and obesity. The participants as a whole were overweight, with an average BMI of 27.54±6.15, with little difference in BMI detected between food stamp recipients and non-recipients. About 62 percent of participants are overweight or obese and about half of these individuals are obese. High percent body fat paralleled overweight/obesity in both populations, a finding similar to the work of previous researchers who found a significant relationship between overweight/obesity and food insecurity or poverty [16, 17].

Our other chief nutritional assessment tool was two 24-hour diet recalls. Twenty-four-hour diet recalls were collected at the beginning and end of RCs for each woman, using the multiple-pass method used in CSFII [6]. The first recall was collected during the in-home interview; the recall at the end of the RC was conducted via a telephone interview. Materials were left behind for the woman to consult as she discussed her intake over the telephone, so that participant and researcher could be sure they were using similar reference points during this interview. Energy and nutrient intakes reported here are based on data from these 24-hour recalls and compared with recommended intakes, using Nutritionist V. Absolute intake and percent of total energy from total fat, saturated fatty acid (SFA) and cholesterol intake were calculated and compared with the National Cholesterol Education Program (NCEP) Guidelines for a Step 1 diet. We also used the data to determine the number of eating episodes per day, with an eating episode defined as any time participants ingested a food or beverage with any energy.

Results from the analysis of the 24-

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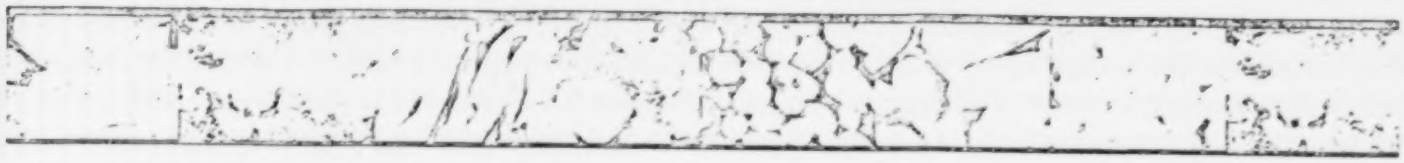

hour dietary recalls revealed several dietary problems for the women in our study. Women receiving food stamps had a significantly lower (p=0.001) mean energy intake (kilocalories [kcal]) at the end (1884±988.2 [SD]) of the RC than at the beginning (1400.12±776.9). Mean intake at the end of the RC for this group did not meet the RDA for energy. Low energy intake is often associated with poor nutrient intake or frank nutrient deficiencies. Further, a significantly lower (p=0.0176) percentage of women receiving food stamps met the RDA for energy at the end of the RC (21%) than at the beginning of the RC (53%). Non-food stamp recipients had an increase (NS) in energy intake at the end of the RC (1725±871.6 and 1960.50±1485.9, respectively). No difference between the percentage of women meeting the RDA for energy was observed at the end of the RC.

Women receiving food stamps had a significantly lower (p=0.0228) intake of total fat (grams) at the beginning of the RC (77.4±49.9) compared with end of the RC (54.7±41.8). This was generally linked with the decrease in total energy intake; although, when intake of total fat was standardized against 1000/kcal ingested, the difference between time points only approached statistical significance (p=0.0555). Mean percent energy from fat in these women exceeded the NCEP guidelines for a Step 1 diet: 35 percent at the beginning of the RC and 33 percent at the end. Non-food stamp recipients had an increase (NS) in total fat intake (grams) at the end of the RC (74.2±71.6) when compared with the beginning of the RC (56.1±43.7). Percent energy from total fat was lower in non-food stamp recipients at the beginning than at the end of the RC (27.0% and 29.7%, respectively).

There were no significant differences between food stamp recipients or non-recipients in percent energy from total fat either at the beginning or end of the RC; nor was there a significant difference in the difference between time points. It is of note that the mean energy from total fat for the entire population was 32 percent for each time point tested. This level is higher than recommendations.

Women receiving food stamps had a significantly lower (p=0.0181) intake of SFA (grams) at the beginning of the RC (25.20±17.91) compared with end of the RC (17.12±11.86). This was linked with the decrease in total energy intake noted; when intake of SFA was standardized against 1000/kcal ingested, there was no difference between time points. Mean percent energy from fat in these women slightly exceeded the NCEP guidelines for a Step 1 diet: 11 percent at the beginning and end of the RC. Non-food stamp recipients had an increase (NS) in SFA intake (grams) at the end of the RC (25.9±26.30) when compared with the beginning of the RC (18.4±15.63). Percent energy from SFA was lower in non-food stamp recipients at the beginning and end of the RC (8.69% and 10.1%, respectively). There were no significant differences between food stamp recipients or nonrecipients in percent energy from SFA either at the beginning or end of the RC; nor was there a significant difference in the difference between time points. It is of note that the mean energy from SFA for the entire population was 10.4 percent for each time point tested; this level is slightly higher than recommendations.

Mean dietary cholesterol intake (mg) did not exceed NCEP recommendations for either group at the beginning or end of the RC. At the beginning of the RC, levels were 268±195.8 and 243±258.7 for food stamp recipients and nonrecipients, respectively. At the end of the RC, they were 255±202.93 and 241±317.68, respectively.

Sodium intake (mg) for food stamp recipients exceeded the NCEP recommendations at the beginning of the RC (3038±2080); however this intake was significantly lower (p=0.0253) at the end of the RC (2032±1747). The lower intake at the end of the RC was probably the result of lower energy intakes in this group. Sodium intake for non-food stamp recipients met or slightly exceeded the NCEP recommendations: 2434±1501 and 2648±2496 at the beginning and end of the RC, respectively. Sodium intake was extremely variable with some levels as high as 9633 mg/day. Nearly half of the women exceeded the recommended intake of 2,400 mg sodium/day. Heavy reliance on fast foods by women in both groups is the probable cause of the high sodium intake. Low dietary sodium has been linked to reductions in blood pressure [14]. Moreover, diets high in fruits and vegetables and low-fat dairy products [15], have also been shown to lower blood pressures. As discussed below, the poor diets seen in the women in this study do not meet this recommendation.

It should also be noted that intake of total fat, SFA, cholesterol and sodium was extremely variable in both groups; although the mean intakes were often at or under recommended levels, many women in both groups exceeded recommended intakes (Table 4).

Micronutrient intake of participants was poor. Although there were few significant differences in diet quality between food stamp users and non-users, most women failed to meet at least 2/3 of the recommended daily intake for selected key nutrients (Table 5). A high number of women in both groups did not meet at least 2/3 of the recommended intake for calcium, iron, zinc, vitamins A, E, C, B6 and folate (Table 6); low levels of these nutrients could predispose persons to higher rates of chronic diseases and immune system disorders[1]. The dietary insufficiency of both the food stamp and non-food stamp group is an apparent contradiction to other research suggesting the nutrient intake of food stamp recipients is improved significantly.

The Food Guide Pyramid was established to help guide the public in selecting healthy food choices, as well as encourage variety in the diet. Table 7 clearly demonstrates that study participants do not eat according to the Food Guide Pyramid. The low intake of fruits, vegetables and dairy supports the finding of low intakes of vitamins A, C and folate. The number of menu items consumed by women receiving food stamps decreased significantly from the beginning of the RC compared with the end of the RC, suggesting less variety in the diets, and possibly less food, at the end of the RC. The importance of varied diets is seen from the recommendations of both the Food Guide Pyramid and the US Dietary Guidelines. The number of eating episodes in women who obtained food stamps decreased from 3.57±1.03 at the beginning of the research cycle to 3.04±0.97 at the end of the month (p=0.053), a finding that approaches significance. No significant differences in number of eating episodes were observed for the group of women not receiving

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Table 4. **Number and percentage of food stamp recipients (n=21) and non-food stamp recipients (n=9) who consumed over 100% of the National Cholesterol Education Program recommendations for total fat, saturated fatty acid (SFA), cholesterol and sodium for a Step 1 diet.**

	Beginning of RC		End of RC	
	Food Stamps	No Food Stamps	Food Stamps	No Food Stamps
Nutrient	# of Participants (%)		# of Participants (%)	
Total Fat	10 (47.6)	2 (22.2)	7 (33.3)	4 (44.4)
SFA	9 (42.9)	6 (66.7)	3 (14.3)	7 (77.8)
Cholesterol	7 (33.3)	2 (22.2)	8 (38.1)	2 (22.2)
Sodium	11 (52.4)	4 (44.4)	7 (33.3)	4 (44.4)

food stamps. In this study, the variation in eating episodes is small; however, the decreased energy intake at the end of the RC is not. A cyclical pattern of eating/-energy intake has been linked, in larger population studies, with overweight in food insecure women [17].

Summary

The overwhelming majority of study participants had poor diets, despite the fact that few of them reported food insecurity or hunger. In many cases, their "poor" diet reflects a somewhat typical, unreformed "Southern" diet, with a heavy emphasis on fats: fried foods, fat meats eaten and fat meat used for seasoning; starches; and large quantities of food — when food is available. Participants' diets also depended on "fast" food, had little variety, included few fresh fruits or vegetables and virtually no dairy products. When we asked the women to describe a "balanced" meal, or what it meant to her to prepare a balanced meal, the response most often revealed that "balanced" means "huge." In some cases women could articulate that a balanced meal included foods from each of the major food groups, and they could even give some examples, but the women did not indicate they ate this way. Moreover, milk and fruit were usually omitted from even this abstract definition. Occasionally a woman would point out that it was "too expensive" to prepare a "big" balanced meal every day, justifying her reliance on fatty meats and starches.

It should be noted that, besides any obvious disconnect between nutrition education and personal behavior, many of the women in these studies are approaching an age where early, multiple pregnancies, poor diet or drug or alcohol abuse, will begin to take tolls on their bodies and their health. Nutrition-related chronic diseases, like Type 2 diabetes mellitus, coronary heart disease and hypertension disproportionally effect low income women; obesity is often a co-morbid condition. For many women, these chronic conditions are left untreated or are treated intermittently when there is a crisis. The women's lack of health care coverage will surely loom large as their health history, poor nutrition, lack of available nutrition education and other environmental stressors conspire to undermine their long-term physical well being.

The American Dietetic Association (ADA) recommends "aggressive action" to remedy food insecurity and the health problems related to food insecurity [1]. The ADA calls upon private and government entities to work together to mitigate circumstances like those described in this paper. There are roles to be played by government agencies, policymakers, faith-based communities, hunger prevention advocacy groups, the Cooperative Extension Service and researchers. Cooperation is especially important during a period such as the one we find ourselves in — a major reordering of government assistance programs. The ADA also notes that a policy change like PRWORA that makes even a temporary reduction in household income can have negative effects on food security [1]. The so-called "food safety net" must be protected so that not only food security, but healthy eating, gives low-resource families and children the best possible chance for self-sufficiency on all levels.

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Table 5. **Micro nutrient intake (mean+SD) for Louisiana women, receiving food stamps (FS) or not receiving food stamps, at the beginning and end of the resource cycle (RC).**

	Absolute Intake — FS		Absolute Intake — non FS	
Nutrient	Beginning of RC	End of RC	Beginning of RC	End of RC
Calcium (mg)	425.8±320.2	361.4±323.1	507.2±328.1	593.1±481.9
Iron (mg)	11.6±7.3	9.4±7.0	8.7±3.6	10.4±7.8
Zinc (mg)	8.07±6.3	8.2±6.3	6.3±4.2	4.6±5.4
Vitamin A (RE)	392.4±386.8	437.1±506.6	1360.6±2925.3	337.8±459.6
Vitamin E (mg)	6.5±8.2	6.8±11.3	2.9±2.6	2.2±2.5
Vitamin C (mg)	72.9±80.3	65.0±90.0	45.4±81.5	125.8±211.6
Vitamin B6 (mg)	1.3±1.1	1.1±1.1	1.08±0.6	0.9±0.9
Vitamin B12 (mcg)	3.8±4.3	3.0±2.5	3.0±3.5	1.9±2.2
Thiamin (mg)	1.4±1.0	1.1±0.9	1.0±0.6	1.2±0.87
Niacin (mg)	18.5±11.7	15.6±10	14.1±6.9	15.6±11.0
Riboflavin (mg)	1.4±0.8	1.2±0.2	1.5±1.04	1.2±1.0
Folate (mg)	225.2±170.9	205.1±206.7	215.8±108.3	186.7±148.5

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***Table 6.* Number and percent of Louisiana women who did not meet at least two thirds of the recommended intake for key micro nutrients at the beginning and end of the resource cycle (RC).**

	Did not meet at least 2/3 of recommendation — FS		Did not meet at least 2/3 of recommendation — non FS	
Nutrient	Beginning of RC n (%)	End of RC n (%)	Beginning of RC n (%)	End of RC n (%)
Calcium	16 (76.2)	15 (71.4)	4 (44.4)	5 (55.5)
Iron	10 (47.6)	12 (57.1)	7 (77.8)	3 (33.3)
Zinc	13 (61.9)	10 (47.6)	7 (77.8)	8 (88.9)
Vitamin A	18 (85.7)	16 (76.2)	5 (55.5)	7 (77.8)
Vitamin E	14 (66.6)	15 (71.4)	7 (77.8)	7 (77.8)
Vitamin C	8 (38.1)	9 (42.9)	6 (66.7)	6 (66.7)
Vitamin B6	13 (61.9)	14 (66.7)	3 (33.3)	4 (44.4)
Vitamin B12	5 (23.8)	8 (38.1)	3 (33.3)	4 (44.4)
Thiamin	4 (19.0)	8 (38.1)	2 (22.2)	3 (33.3)
Niacin	4 (19.0)	8 (38.1)	2 (22.2)	3 (33.3)
Riboflavin	7 (33.3)	9 (42.9)	2 (22.2)	2 (22.2)
Folate	17 (81.0)	17 (81.0)	5 (55.5)	5 (55.5)

***Table 7.* Mean number of servings ± standard deviation from the Food Guide Pyramid by Louisiana women at the beginning and end of the resource cycle (RC).**

		Food Stamp Recipients		Non-Food Stamp Recipients	
Food Group	Recommended Servings	Beginning of RC	End of RC	Beginning of RC	End of RC
Grains	6-11	4.79±4.07	3.33±2.52	4.83±2.92	4.97±2.85
Fruit	2-4	0.52±0.93	0.58±0.78	0.31±0.75	0.83±1.97
Vegetables	3-5	2.14±1.91	1.38±2.36	1.17±2.11	1.17±2.41
Milk	2-3	0.75±0.83	0.476±0.73	0.61±0.78	0.56±0.21
Meat	2-3	2.15±1.82	2.20±1.53	2.19±1.31	1.94±1.66
Fats, Oils, Sweets	moderation	22.51±13.35	16.20±9.20	26.75±23.86	16.97±17.96

Endnotes

[a] This project also included participation of Dr. Janet Marsh at Clemson University and a sample of South Carolina families. Those data are not reported here. The researchers at LSU and Clemson are participants in CSREES Multi-state project (S-298) entitled "Assessing impacts of welfare reform on individual, family and community well-being in the South." The Louisiana and South Carolina studies together form an important part of the pilot studies conducted this past year in anticipation of a larger study assessing the impact of welfare reform in the rural South and Puerto Rico. The goal for both

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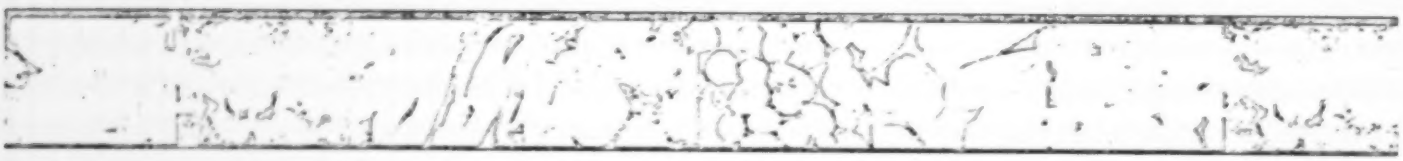

teams is to follow as many of these women as possible for the next several years, as part of our participation in the S-298 project.

[b] The food stamp allotment in Louisiana for a family of four is $452/month.

[c] We gratefully acknowledge the work of a small army of undergraduate and graduate students in transcribing, checking, coding and entering the qualitative quantitative data reported here; the financial support of the USDA through the Southern Rural Development Center at Mississippi State University; of the Louisiana Children's Trust Fund in the state Department of Social Services and of the financial support of the Louisiana State University Agricultural Center; the patience of our families in our absence during extended trips to the field; and the generosity of the women who shared their lives with us.

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